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The observed variation in the radial velocity of the brighter component is therefore not due to orbital motion in the visual system.

In *Annals Harvard Observatory*, **28**, Part 1, 98, 1897, the spectrum of the brighter component of *β Cygni* is described as "composite." It is in general of the type corresponding to yellow stars, such as *Arcturus* or *α Cassiopeiae*, but has also the strong hydrogen lines and the weak and narrow K calcium line characteristic of many blue stars, such as *Sirius*. The composite spectrum "could be explained on the supposition that the brighter member of the visual double star is itself double, one component being a star of the 'second type' (yellow), the other a star of the 'first type' (blue), approaching the second type." Our observed radial velocities are confirmatory of the Harvard hypothesis that *β Cygni* is a triple system. The period of revolution in the spectroscopic binary system comprised in the brighter component of the visual binary is apparently of considerable length, inasmuch as the radial velocity varies slowly and the variation observed in twenty years seems to have been in only one direction.

W. W. CAMPBELL.

AN INTERESTING DOUBLE STAR

In the course of the radial velocity program of this observatory, the star Boss 6158, R. A. $23^h\ 54^m.4$, Dec. + 33° 11′ (1900) was observed. This star is a double, No. 12675 Burnham's *General Catalogue*, the separation of the components being now in the neighborhood of 2″. They are of equal magnitude, visual 6.58, photographic 7.08 and of the same type about F5. Burnham plots their relative motion which he states is "apparently rectilinear."

It seemed to me, when they were so close together in the sky and of equal magnitude and type, there was a high probability that they were physically connected. If in addition their radial velocities proved to be nearly the same, this probability would be greatly strengthened.

It will be of interest as showing the actual performance of the new installation to give the particulars of observation and measurement. Spectra of each have been obtained on five nights with the single prism form of the spectrograph, linear dispersion 35A per mm. at Hγ. The spectra are all well exposed altho the average exposure time given each star of 7.08 photographic magnitude was 19.6

minutes. The plates were measured on the Hartmann Spectro-Comparator with the following values of the velocity:

Date, 1918	Velocity Preceding Star	Velocity Following Star
Oct. 19	−5.7	−5.8
" 24	−7.9	−3.0
" 29	−8.6	−3.5
Nov. 24	−6.5	−5.4
Dec. 15	−8.3	−3.3
Means	−7.4	−4.2

The probable error of a single plate so far as it means anything from so few observations is ±0.85$^{\mathrm{km}}$ per second.

The difference in velocity is of the order to be expected if the star were a binary and this taken in conjunction with the small separation, the equality in magnitude and type make a chain of coincidences improbable on any supposition except that the stars are physically connected.

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Victoria, B. C., Jan. 15, 1919.

FOURTEEN SPECTROSCOPIC BINARIES

Spectroscopic observations of the following stars made at Mount Wilson with the 60-inch reflector and the Cassegrain spectrograph show variations in the radial velocity.

TU *Cassiopeiae* $\alpha = 0^{h}\ 21^{m}$ $\delta = +50^{\circ}\ 43'$ $m = 7.2 - 8.6$

This star is a Cepheid variable with a period of 2.14 days. Three observations show a range between −4 and −43$^{\mathrm{km}}$. The spectral type as based upon the hydrogen lines varies from F0 at maximum to F9 at minimum of light. As in the case of other Cepheids the remaining lines of the spectrum, with the exception of the enhanced lines, show little change.

Boss 373 = Σ 145 $\alpha = 1^{h}\ 36^{m}$ $\delta = +25^{\circ}\ 14'$ $m = 6.3$

This is a most interesting binary, with the spectra of both components present. It is the brighter star of the visual binary. The maximum relative velocity observed among twelve spectrograms is 167$^{\mathrm{km}}$. The spectra of the two components are nearly the same, and are estimated as F3. The period of variation is about four days, and the orbit is now under investigation.

Boss 593 $\alpha = 2^{h}\ 31^{m}$ $\delta = +24^{\circ}\ 13'$ $m = 6.6$